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Translation

PATENT COOPERATION TREATY

PCT/JP2003/014349



PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P32218-P0	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/JP2003/014349	International filing date (day/month/year) 12 November 2003 (12.11.2003)	Priority date (day/month/year) 22 November 2002 (22.11.2002)
International Patent Classification (IPC) or national classification and IPC H01J 11/02, 9/02		
Applicant MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.		

- This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 6 sheets, including this cover sheet.
- This report is also accompanied by ANNEXES, comprising:
  - ☒ (sent to the applicant and to the International Bureau) a total of 4 sheets, as follows:
    - ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
    - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
  - ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) \_\_\_\_\_, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

- This report contains indications relating to the following items:

- ☒ Box No. I Basis of the report
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☒ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

Date of submission of the demand 28 May 2004 (28.05.2004)	Date of completion of this report 21 December 2004 (21.12.2004)
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2003/014349

## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is language of a translation furnished for the purpose of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☐ The international application as originally filed/furnished
- ☒ the description:
- pages \_\_\_\_\_ 1-11,12-13,14-15,18-21 \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_ 11/1,13/1,16,17 \_\_\_\_\_ received by this Authority on \_\_\_\_\_ 28 May 2004 (28.05.2004)
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the claims:
- pages \_\_\_\_\_ 1-28 \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_, as amended (together with any statement) under Article 19
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the drawings:
- pages \_\_\_\_\_ 1/9-9/9 \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP03/14349

**Box No. V** Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	6-8, 14, 17, 20, 22, 25-28	YES
	Claims	1-5, 9-13, 15, 16, 18, 19, 21, 23, 24	NO
Inventive step (IS)	Claims	14, 17	YES
	Claims	1-13, 15, 16, 18-28	NO
Industrial applicability (IA)	Claims	1-28	YES
	Claims		NO

## 2. Citations and explanations (Rule 70.7)

Document 1: JP, 9-208851, A (Shinto Paint Co., Ltd.), 12 August, 1997 (12.08.97), full text, all drawings  
 Document 2: JP, 2000-129161, A (Mitsubishi Materials Corp.), 9 May, 2000 (09.05.00), full text, all drawings  
 Document 3: JP, 2000-76989, A (Matsushita Electric Industrial Co., Ltd.), 14 March, 2000 (14.03.00), paragraphs [0023] to [0030]  
 Document 4: JP, 57-182942, A (International Business Machines Corp.), 11 November, 1982 (11.11.82), page 2, lower right column, line 12 to page 3, upper left column, line 9  
 Document 5: JP, 11-86738, A (Fujitsu Ltd.), 30 March, 1999 (30.03.99), full text, all drawings  
 Document 6: JP, 2002-124180, A (Canon Inc.), 26 April, 2002 (26.04.02), paragraph [0071]  
 Document 7: JP, 11-238462, A (Fujitsu Ltd.), 31 August, 1999 (31.08.99), full text, all drawings

### Claims 1-5, 19, 21, 23 and 24

The subject matters of claims 1-5, 19, 21, 23 and 24 do not appear to be novel or to involve an inventive step in view of document 1 or document 2.

Each of documents 1 and 2 discloses the technique of forming a protective film of a plasma display by burning a paste or a coating fluid which contains particles of magnesium oxide and a precursor of magnesium oxide.

### Claim 6

The subject matter of claim 6 does not appear to involve an inventive step in view of documents 1 and 3. Document 3 discloses the technique of surface reforming by oxidizing a protective layer of magnesium oxide.

It would be obvious to a specialist in the technical field concerned to make oxygen-rich particles of magnesium oxide, i.e., magnesium oxide particles fed with a sufficient amount of oxygen by applying the technique of document 3 to the forming of the protective film shown in document 1.

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

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## Box No. VI Certain documents cited

## 1. Certain published documents (Rule 70.10)

Application No. Patent No.	Publication date (day/month/year)	Filing date (day/month/year)	Priority date (valid claim) (day/month/year)
JP 2003-272530 A [E, X]	26.09.2003	15.03.2002	

## 2. Non-written disclosures (Rule 70.9)

Kind of non-written disclosure	Date of non-written disclosure (day/month/year)	Date of written disclosure referring to non-written disclosure (day/month/year)

**Box No. VIII Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

According to a statement concerning claim 6 on page 11 to page 11/1 of the description amended by the amendment of procedure dated May 28, 2004, the oxygen-rich constitution is intended to increase the number of oxygen-deficient parts of crystal particles of magnesium.

As shown also in paragraph [0028] of document 3 referred to in V.2, however, on the premise that the word "oxygen-rich" signifies a condition in which a sufficient amount of oxygen has been supplied, the said oxygen combines with oxygen-deficient parts and it is considered that the number of oxygen-deficient parts will decrease contrary to the intention.

Thus, the technical significance of creating an oxygen-rich condition is not sufficiently supported by the description.

Further, the description lacks sufficient explanation of how much oxygen should be contained to be oxygen-rich and how oxygen-rich magnesium oxide is manufactured.

According to claim 14, a second material is caused to exist in the grain boundary of a first material, and in claim 13 to which claim 4 refers, metal materials, insulating materials having higher Fermi energy than magnesium oxide and semiconductor materials having higher Fermi energy than magnesium oxide are shown as second materials. For the corresponding Example 4, however, only Fe, Al, Ta, Mo, W and Ni, as well as Mg, are cited as concrete names of materials in lines 11-12, page 20 of the description. Nevertheless, all of these materials do not meet the condition mentioned in line 7, page 20 of the description, i.e., metals having lower melting points than about 650°C. Therefore, of the second materials shown in claim 13, which can be used except MG and how such materials can be manufactured are not sufficiently supported in the description.

The same applies to claim 17, too. Concerning the use of nanocomposite materials to form a protective layer, concrete matters such as the names of usable materials and the method of manufacture are not sufficiently supported.

## Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: V

## Claims 7 and 25-27

The subject matters of claims 7 and 25-27 do not appear to involve an inventive step in view of documents 1 and 4.

Document 4 discloses the technique of doping a protective film of magnesium oxide with chromium. It would be obvious to a specialist in the technical field concerned to apply the technique of document 4 to the invention of document 1.

Changing a material to be doped as one thinks fit to obtain an optimum one and selecting the most suitable doping method for a material to be doped would be within the ordinary creative ability of a specialist in the technical field concerned.

## Claims 8, 20, 22 and 28

The subject matters of claims 8, 20, 22 and 28 do not appear to involve an inventive step in view of documents 5 and 6.

Document 5 discloses the technique of making a protective layer by forming an island-shaped diamond on the layer of magnesium oxide.

In view of the function of the island-shaped diamond to facilitate the discharge of electrons as stated in paragraph [0030] of document 5, it would be obvious to a specialist in the technical field concerned to use commonly known fullerene or carbon nanotube shown in paragraph [0071] of document 6, in place of the island-shaped diamond, in the invention of document 5.

## Claims 9-13, 15, 16 and 18

The subject matters of claims 9-13, 15, 16 and 18 do not appear to be novel or to involve an inventive step in view of document 7.

Particularly in paragraph [0023] of document 7, the technique of forming an island-shaped float electrode on a protective film is disclosed. No special difference is found between the subject matters of the above claims and the invention of document 7.

## Claims 14 and 17

The subject matters of claims 14 and 17 appear to be novel and to involve an inventive step in view of the documents cited in the ISR including the abovementioned documents 1-7.

The technique of forming a protective layer by causing a second material to exist in a grain boundary of magnesium oxide, which is a first material, and the technique of forming a protective film from a nanocomposite material are neither disclosed nor suggested in any of the documents cited in the ISR.